

Vermont.—Lunenburg, 10; Strafford, 8; Woodstock, 4.75; Newport, 4.5; Randolph, 4.
Wisconsin.—Sussex, 3.
Wyoming.—Cheyenne, about 20; Fort Bridger, 14.8,

DEPTH OF UNMELTED SNOW ON GROUND AT END OF MONTH.
[Expressed in inches.]

Colorado.—Pike's Peak, 24.
Maine.—Eastport, trace.
Massachusetts.—Rowe, in drifts.
Minnesota.—Saint Vincent, 0.2.
New Hampshire.—Mount Washington, 25; Grafton, drifts in places.

SLEET.

Colorado.—Fort Garland, 6th, 7th, 20th, 24th, 26th, 29th.
Connecticut.—New Haven, 22d.
Dakota.—Bismarck, 6th; Fort Bennett, 4th; Fort Meade, 14th; Fort Sisseton, 14th, 22d; Morrilton, 1st; Yankton, 10th.
Illinois.—Chicago, 6th.
Indiana.—Indianapolis, 23d.
Iowa.—Davenport, 6th, 7th; Des Moines, 23d.
Maine.—Bangor, 27th.
Massachusetts.—Fort Warren, 8th.
Michigan.—Escanaba, 26th, 27th; Fort Brady, 11th; Grand Haven, 3d, 5th, 22d; Marquette, 17th, 19th.
Minnesota.—Saint Paul, 10th, 22d.
Montana.—Fort Shaw, 9th, 22d.
Nebraska.—Clear Creek, 23d; North Platte, 5th; Omaha, 23d.
New Hampshire.—Mount Washington, 5th, 6th, 11th, 19th.
New Jersey.—Freehold, 23d, 24th.
New York.—Fort Hamilton, 29th; New York City, 22d, 23d, 29th.
Ohio.—Canal Dover, 23d; Toledo, 7th; Wauseon, 22d.
Pennsylvania.—Blooming Grove, 22d; Chambersburg, 23d, 29th; Leetsdale, 22d.
Rhode Island.—Block Island, 23d; Point Judith, 23d, 24th.
Virginia.—Lynchburg, 1st; Marion, 24th; Variety Mills, 1st, 24th.
Wisconsin.—La Crosse, 10th, 22d.

SNOW FROM A CLOUDLESS SKY.

Keokuk, Iowa, 2d.—Between 7 and 8 a. m. light snow fell, while the sky was perfectly clear.

COTTON REGION REPORTS.

The temperature and rainfall observations which were made from April to October, 1882, in the cotton districts, were resumed April 1, 1882. In determining the averages for the various districts, as given in table below, reports have been used from the same stations, as were published in the REVIEW for April, 1882.

Meteorological Record of the Cotton Districts for the month of April, 1882.

Districts.	Average rainfall in inches.	Temperature.		Extremes.	
		Mean of the maxima.	Mean of the minima.	Highest.	Lowest.
New Orleans.....	6.99	80.0	59.6	97	40
Savannah.....	5.65	80.5	58.0	94	33
Charleston.....	3.58	76.4	54.9	89	37
Atlanta.....	6.39	74.1	51.0	88	30
Wilmington.....	4.97	70.9	48.7	87	26
Memphis.....	6.93	74.9	52.7	90	28
Galveston.....	1.90	79.4	57.2	91	29
Vicksburg.....	7.92	76.9	55.6	89	39
Montgomery.....	8.73	78.2	53.7	91	28
Augusta.....	6.58	76.8	54.7	92	31
Little Rock.....	6.78	75.3	53.9	90	37.2
Mobile.....	7.80	80.9	57.1	91	36

WINDS.

The prevailing directions of the wind for the month of April, 1883, at the Signal Service stations are shown on chart iii., by arrows flying with the wind. It will be seen from this chart

that the prevailing winds have been, with but few exceptions, variable in all of the districts. On the immediate California coast, they were from the west, except northwest at Cape Mendocino; and in Texas they were generally from the south.

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England.....	Block Island, R. I.....	9,625	New London, Conn.....	4,330
Middle Atlantic states.....	Ocean City, Md.....	11,392	Lynchburg, Va.....	2,998
South Atlantic states.....	Hatteras, N. C.....	13,551	Atlanta, Ga.....	3,026
Florida peninsula.....	Punta Rasa.....	8,183	Sanford, Fla.....	4,904
East Gulf.....	Starkville, Miss.....	6,577	Montgomery, Ala.....	3,506
West Gulf.....	Indianola, Tex.....	11,722	San Antonio, Tex.....	4,117
Rio Grande valley.....	Brownsville, Tex.....	7,949	Engle Pass, Tex.....	4,328
Ohio valley.....	Louisville, Ky.....	6,289	Pittsburg, Pa.....	3,713
Tennessee.....	Nashville.....	4,957	Memphis, Tenn.....	4,717
Lower lakes.....	Toledo, Ohio.....	8,254	Oswego, N. Y.....	5,552
Upper lakes.....	Milwaukee, Wis.....	10,225	Marquette, Mich.....	5,664
Extreme northwest.....	Moorhead, Minn.....	8,791	Saint Vincent, Minn.....	5,338
Upper Mississippi valley.....	Keokuk, Iowa.....	8,313	Dubuque, Iowa.....	4,998
Missouri valley.....	Huron, Dak.....	8,343	Fort Bennett, Dak.....	5,720
Northern slope.....	North Platte, Neb.....	9,256	Billings, Mont.....	4,470
Middle slope.....	Fort Elliott, Tex.....	10,742	Denver, Colo.....	4,624
Southern slope.....	Fort Sill, Ind. T.....	10,327	Fort Davis, Tex.....	5,280
Southern plateau.....	Santa Fe, N. Mex.....	8,710	Tucson, Ariz.....	3,408
Middle plateau.....	Pioche, Nev.....	5,983	Salt Lake City, Utah.....	4,914
Northern plateau.....	Eagle Rock, Idaho.....	9,350	Lewiston, Idaho.....	2,440
North Pacific.....	Portland, Oreg.....	4,628	Roseburg, Oreg.....	3,202
Middle Pacific.....	Cape Mendocino, Cal.....	*10,677	Sacramento, Cal.....	5,933
South Pacific.....	San Diego, Cal.....	5,798	Visalia, Cal.....	3,150

* Record for eighteen days only.

On the summit of Mount Washington, New Hampshire, the total movement of the air was 23,900 miles, or 10,900 miles less than the total movement of the preceding month.

On the summit of Pike's Peak, Colorado, the total movement for the last eight days of the month was 3,102, no record having been kept during the earlier part of the month.

HIGH WINDS.

With the exception of the following dates; viz.: 7th, 13th, 14th, 15th, 17th, 23d, 24th, 29th, maximum wind velocities of fifty miles per hour or more were daily recorded on the summit of Mount Washington, the highest velocity of the month, eighty-eight miles from the southeast, occurring on the 11th.

At Cape Mendocino, California, the following high velocities occurred: 70 se., 1st; 88 se., 2d; 51 nw., 4th; 62 se., 7th; 92 se., 14th; 100 se., 15th. During a violent hurricane on the latter date, the anemometer caps were blown away, the self-register showing a velocity of one hundred and twenty miles per hour for the five minutes previous to the time of the breaking of the instrument. Violent gales also occurred at this place on the 18th and 19th.

Other high winds occurred during April as follows:—Cedar Keys, Florida, 50 sw., 50 se., and 71 s., on the 12th, 22d, and 23d, respectively; Fort Verde, Arizona, 60 sw., 12th; Portsmouth, North Carolina, 60 ne., 24th; Hatteras, North Carolina, 58 sw., 23d; Duluth, Minnesota, 52 ne., and 58 ne., on the 21st, and 22d, respectively; Fort Maginnis, Montana, 56 nw., 21st; Fort Sill, Indian Territory, 56 se., 21st; Bismarck, Dakota, 56 e., 21st; Indianola, Texas, 56 nw., 28th; Yankton, Dakota, 55 nw., 14th; West Las Animas, Colorado, 54 nw., 22d; Saint Paul, Minnesota, 53 se., 13th; Fort Shaw, Montana, 52 sw., 8th; North Platte, Nebraska, 52 se., 20th; Cape Henry, Virginia, 50 nw., 16th.

LOCAL STORMS.

On Sunday, April 22d, while the centre of the storm shown as viii., on chart i., was central in eastern Kansas, very violent tornadoes occurred in the states of Iowa, Mississippi, Alabama, and Georgia. The destruction of property was very great; and in Mississippi and Georgia, there were from two to three hundred lives lost, and about one thousand persons injured.

The reports of storms of local character which have occurred during April, arranged by states, are as follows:

Alabama.—Talladega, Talladega county, 23d: the heavy storm of last night did considerable damage in this community.

The north-bound train on the east Tennessee, Virginia and Georgia railroad was thrown from the track down an embankment. Near Springville, Saint Clair county, more than twenty houses were unroofed; one person was killed and several were wounded.

Arkansas.—Little Rock: during the night of the 5th a severe wind and hail-storm prevailed over the central and southern parts of this state, doing much damage to buildings and fences and blowing down many trees. Along the line of the Hot Springs and Malvern railroad, a passenger coach was lifted from the track and thrown down an embankment by the force of the wind. Two buildings were blown down at Alexander, Pulaski county. At Mablevale, ten miles south of Little Rock, the storm was especially severe. Several houses were blown down in that locality and the roads were rendered impassable by the fallen trees. Later reports from points beyond the Ouachita river, remote from the railroads and telegraph, show that great damage was done by this storm in that section. The destruction of houses and fences in the track of the storm was complete. Considerable loss of life was also reported.

At 11 p. m., of the 13th a tornado occurred in Franklin county, about fifteen miles west of Ozark. It first struck the farm of Mr. Henry Webb, where the buildings and fences were levelled to the ground, trees were uprooted and several persons were injured. Damage to the extent of \$2,000 was done in this locality. Between midnight and 1 a. m. of the 14th, the tornado reached the town of White Oak, about six miles east of Mr. Webb's farm, where it was very violent. At this place four persons were fatally injured. Trees, three feet in diameter, were broken and twisted off, and a large number of green railroad-ties, which were piled up along the track, were scattered in all directions by the force of the wind. The telegraph lines were prostrated for a distance of four miles and the railroad track was broken in several places by the falling of heavy trees. The damage to property in Franklin county is estimated at \$20,000, besides the loss of much valuable timber. Scarcely one tree was left on the sides of the mountains, which had been covered with timber. The average width of the storm's path was about three miles. It crossed the river about half a mile south of White Oak, thence it pursued a northeasterly course up White Oak creek, and passed off in a west-northwesterly direction. A heavy fall of large hail accompanied the storm, the hailstones being as large as hen's eggs.

At 3.15 p. m. of the 14th, a tornado struck the town of Conway, Faulkner county, on the Fort Smith and Little Rock railroad, causing damage to the extent of \$50,000. Many buildings were blown down or unroofed, and several persons suffered bodily injury. The front of a house, which was not directly in the storm's path, was blown in, although the storm was moving away from it. The track of the storm was about three hundred yards wide and extended over the country for several miles both northeast and southwest of Conway.

British Columbia.—Victoria, 17th: four vessels were blown ashore at this port during the storm of the 16th; but there was but little or no damage done on shore. The wind blew with great force for fifteen hours.

Colorado.—Denver: during a storm in the mountains on the 21st, a passenger train on the South Park railroad was blown from the track, near Como, in Park county. The storm was very severe, the wind attaining a velocity of sixty miles per hour.

Pueblo, 21st: The worst storm ever known at this place began at 2 p. m., and continued until 10 p. m. Several houses were unroofed, and the streets were strewn with debris.

Georgia.—Americus, Sumpter county: between 3 and 4 p. m. of the 22d, a violent storm, accompanied by hail and rain, passed over the southwestern part of this county, and over the southeastern part of Webster county. As far as has been learned the storm did not extend farther than six miles north of Americus. It first struck a point about two and a half miles south of Botsford, in Sumpter county, where it blew down all buildings and fences in its path. A number of persons were seriously injured, and some were killed.

Swainsborough, Emanuel county, 23d: a tornado passed through this county between 6 and 7 a. m. of this date, scarcely leaving a house standing in its track, and rendering several families homeless. Two persons are known to have been killed and several were injured.

Reports from Eastman, Dodge county, state that a tornado passed over that place during the early morning of the 23d, causing loss of life and property.

Augusta, 23d: a destructive storm is reported to have passed along the Athens branch of the Georgia railroad. Two dwellings near Woodville, Greene county, and Lexington, Oglethorpe county, were blown down, and also a large number of negro cabins and gin-houses in Lincoln and Taliaferro counties.

Atlanta, 23d: reports from Albany, Dougherty county, state that eight persons were killed and about twenty-five were wounded. The track of the storm in Dougherty county was about one-fourth of a mile in width. Loss of life and great damage to property by the storm are reported from Clark and Crawford counties.

Iowa.—Davenport, 14th: a very heavy thunder-storm occurred on this date, the wind reaching a velocity of forty-two miles per hour and blowing down chimneys, fences, trees, etc. On the morning of the 15th, the wind attained a velocity of thirty-eight miles, causing considerable damage. A severe storm occurred on the evening of the 22d, when a wind velocity of thirty miles was recorded. Sioux City: during the night of the 21st a severe storm passed over the eastern parts of Woodbury and Monona counties. A building near Correctionville, in Woodbury county, was carried a distance of eight rods, and was badly damaged. At Danbury, in the same county, a church was entirely destroyed, and numerous other buildings were blown down or otherwise damaged. Des Moines, 23d: reports from Dunlap, Harrison county, state that a tornado passed near that place on the night of the 21st, destroying many farm-houses and killing much stock. Trees were torn up by the roots and many small buildings were completely carried away; some loss of life was also reported. The track of the storm was northward through Monona and Woodbury counties. On the evening of the 22d, a tornado passed up Maple river valley, following the course of the Chicago and North-western railroad. At Danbury, in Woodbury county, a church was wrecked, three houses were blown down and other minor damages were inflicted.

Kansas.—Fort Riley, Davis county, 13th: between 7 and 8 p. m., a violent storm from the southeast passed over this place, unroofing and blowing down buildings. The clouds were very heavy and black, with continuous lightning and occasional thunder. The thermometer recorded 96° at 3 p. m.

Kingman, Kingman county: during the 20th, a strong wind blew steadily from the south, which at night increased in force. At midnight a tornado swept across the county, demolishing almost everything in its path. The storm struck with greatest force along the east and north line of Belmont township, destroying residences and scattering household effects. In the village of Waterloo, there were but one or two houses left standing. In this county, sixteen buildings of various kinds were blown down or injured, causing a loss of about \$3,000.

The storm struck Sun City, Barbour county, at 2 a. m. of the 21st, destroying five houses. The loss was \$5,000. At this place, two persons were killed, and three were wounded.

In Harper county, large quantities of hail fell, some of the stones measuring nine inches in circumference.

At Rome, Sumner county, the hail accompanying the storm destroyed the standing corn and caused other damage. Five buildings were blown down at South Haven. At Wellington, a large three-story building was unroofed; and at New Bedford, three houses were blown down, and one person was fatally wounded.

Minnesota.—Saint Paul: on the night of the 13th, a very severe storm visited Zumbrata Falls, Wabasha county, wrecking a bridge valued at \$5,000, and a large number of buildings.

At Saint Paul, the wind attained a velocity of fifty-three miles per hour from the southeast from 9.14 to 9.39 p. m., blowing down awnings, signs, etc. The storm moderated during the night, but on the 14th, it again increased in force, the wind reaching a velocity of forty-one miles.

Mississippi.—Starkville, 11th: at 9.50 p. m., a thunder-storm accompanied by high wind and hail, visited this place. No damage occurred at this station, but at points twenty miles southward, trees, barns and gin-houses were blown down.

At 1.10 p. m., of the 22d, the wind, which had blown steadily from the southeast, veered to southwest and attained a velocity of thirty-seven miles per hour. About this time the severest storm ever experienced in this community passed in a northeasterly direction about two miles north of this station, sweeping everything before it. The cloud, as observed from this place, was of a decided greenish color, and seemed greatly agitated. It appeared to be about one-fourth of a mile in height, and was accompanied by brilliant electrical displays and rolling thunder. When the rain began the darkness became so great that the movements of the clouds were no longer discernible. The width of the tornado's track was about three hundred yards, and within it everything was levelled to the ground. The largest trees were twisted off or blown down.

On the north side of the storm-track the trees fell towards the south, and on the south side they fell towards the north, while near the centre they fell in all directions. In almost every instance, the trees on either side of the storm-track were blown over, while those within its path were twisted off at different heights, in many places from ten to twenty feet from the ground. Many of the trees appeared to have been twisted from right to left, but in one case a limb was split and a part of it was wound around the trunk from right to left, while the other part was wound from left to right. Within that part of the storm's path visited by the Signal Service observer at Starkville, thirteen houses were entirely destroyed. One of the number, a small frame building, was blown away, the only mark of its former position being the four sills upon which it rested. The ruins of the other houses presented the appearance of having been torn to pieces by an explosion. No loss of life occurred in this vicinity, although several of the houses that were destroyed were occupied. Some buildings in close proximity to those completely demolished, escaped without injury. Only one life was lost in this locality.

At 3.15 p. m. of the 22d, the towns of Wesson and Beauregard, in Copiah county, were visited by a most violent and destructive tornado. At Wesson, a town of about 1,700 inhabitants, twenty-seven houses were destroyed; thirteen persons were killed, and sixty were injured. The total loss at Wesson, will exceed \$20,000.

At Beauregard, a town of six hundred inhabitants, situated about one mile north of Wesson, every dwelling and store in the town were destroyed. Two rows of buildings on Railroad avenue were leveled to the ground, and goods valued at \$150,000 were damaged to the extent of ninety per cent. Twenty-nine persons were killed, and about forty were more or less seriously wounded. The tornado lasted only about fifteen minutes. The force of the wind was such as to carry for a distance of three hundred yards, a solid iron screw of a cotton press, weighing six hundred and seventy-five pounds; and to drive through a red oak sappling, a piece of scantling three by four inches and ten feet in length. Up to April 28th, the damage at Beauregard by the tornado was estimated at \$450,000.

At Tillman Station, Claiborne county, the storm was very violent, causing great damage to all property and some loss of life.

Clay county was visited by two tornadoes, one, about noon, passed over the western part of the county, and the other, about 1 p. m., passed over the central and southern parts. Both of them were very violent, causing loss of life and destroying buildings, trees and fences. At West Point, the tor-

nado was accompanied by torrents of rain and the largest hail ever seen at that place. In Monroe and the neighboring counties lying northward, a number of persons were killed, and many others were injured. In Clay county, the course of the storm was from southwest to northeast, passing entirely through it, and totally destroying a negro settlement near Aberdeen.

Reports from Red Lick, Jefferson county, stated that a tornado passed about one mile east of that place at about 11 a. m. of the 22d, causing some loss of life and great damage to property. Everything in the track of the storm, which was about two hundred yards wide, was swept away. Ten persons were reported to have been killed at Harrisville, Simpson county, and seven were reported to have been killed near Morton, in Scott county.

In Lowndes county, a violent wind and rain storm from the southwest completely demolished all of the buildings on many of the plantations. At Caledonia, two persons were killed; every fence for miles around was swept away, and many trees and building were blown down.

The town of Lawrence, in Newton county, suffered heavy loss of property but no loss of life occurred.

The storm passed east of Natchez, Adams county, at about 10.30 a. m. On the opposite side of the river, in the lower part of Concordia parish, Louisiana, houses were unroofed, one person was killed and several wounded.

Reports from the town of Monticello, Lawrence county, which was almost destroyed by a tornado on April 21, 1882, state that at 11 a. m. the tornado passed about one mile east of that place, causing some loss of life and doing great damage. The track of the storm was about two hundred yards wide, within which everything was swept away.

Missouri.—Saint Louis: the following extract is taken from the April report of Professor F. E. Nipher, Director of the Missouri Weather Service: "At 4 p. m., on the 14th, a severe local storm, which was apparently an incipient tornado, did considerable damage at Hannibal. Its track was about three hundred feet wide. Similar storms, with hail, were observed seven miles west and ten miles north of Mexico. A small tornado, having a width of fifty to seventy feet, passed through the western part of Pleasant Hill, between 7.30 and 8 a. m. A part of a rail-fence was carried eight feet and set down without materially changing the relative position of the rails."

North Carolina.—Williamston, Martin county, 24th: considerable damage was done by the violent wind and rain storm which visited this section at about 2 a. m., of the 23d.

Boykins, Sampson county, 23d: a tornado occurred at 7 a. m., about three miles from this place on the Springhill road. The path of the storm was not more than one hundred and fifty yards in width, and its length was about four miles. The roads in its course were rendered impassable by being strewn with trees and debris. Many buildings were wrecked and several persons suffered bodily injuries. In one instance the flooring of a small house, which was fastened with large nails, was blown up, while the building was otherwise unharmed. It was impossible for the inmates to keep the doors and windows closed during the storm.

The duration of the tornado was not more than three minutes at this place.

Pennsylvania.—Williamsport, 19th: at 5.37 p. m., a severe squall with heavy rain lasting five minutes, did considerable damage to fences, trees, etc., in this locality. Two boats were capsized during the squall, drowning four of the occupants.

Ohio.—Cleveland, 12th: a tornado passed over Milan, Erie county, on the 11th, causing loss of life and property. The storm was the severest experienced in this locality for many years, but only a small section of country was visited by it.

Toledo, 11th: several buildings on the east side of the river were damaged by the storm of this date, but on the opposite side of the river, the damage was very slight.

A severe storm occurred on Lake Erie on the 23d, the wind, at Toledo, reaching a maximum velocity of forty-five miles per

hour, causing entire suspension of shipping business. The water in the river rose to a height of five feet above the ordinary level.

South Carolina.—Reports from Stateburg, Sumpter county, state that the tornado of the 23d appeared to have developed near Wateree swamp, first striking a point about one-half mile to the west of the old State road to Charleston. From this place it pursued a course nearly eastward for a distance of five miles, the width being about three hundred yards. Within the track of the storm but few trees were left standing. Along the northern border of the track for a distance of fifty or seventy-five yards, the trees, for the most part, fell from north to south; on the southern border for the same distance they fell from south to north, or from southeast to northwest, and along the centre they fell mostly in a direct line from west to east, while a few were observed to lie from east to west.

Charleston, 23d: In Barnwell county the tornado of this date cut a path three-fourths of a mile in width through the Saltkeahatchie swamp, as cleanly as though the timbers had been felled for a railway. Within the storm's path residences and cabins and out-buildings were destroyed on many plantations. Many of the best fields have been so covered with trees and debris that they cannot be cleared in time to be cultivated this year. At Blackville, Barnwell county, a large amount of damage was done by the storm. Nearly everything in its track was blown away or badly damaged. The width of the storm's path was from one-half to three-fourths of a mile, and its duration was about ten minutes.

Bishopville, Sumpter county, 23d: about 8 a. m. of this date a violent wind and rain storm visited this section. The main track of the storm was about one hundred and fifty yards wide, within which trees and buildings were levelled to the ground. So far as has been learned the storm began about four miles west of this place and its track has been followed to Lynch's river.

Saint Stephen's, Berkely county, 23d: during the morning of this date a tornado passed through this section, damaging buildings and blowing down trees.

Darlington, Darlington county, 24th: a tornado coming from a northwest direction and pursuing a zigzag course to the south and east struck this county yesterday. Its track was narrow, and the wind seemed to blow from the borders of the storm towards the centre. Trees, fences and buildings were blown down. The storm was accompanied by vivid lightning, rain and small hail.

Tennessee.—Chattanooga, 22d: during the afternoon of this date a tornado passed over this city from southwest to northeast, its main track being about three hundred yards wide and two and one-half miles in length. Diverging from the main storm, a minor track, less than one hundred yards wide, swept around Cameron Hill, rejoining the main track in the northeastern outskirts of the city. The storm continued in full force from 4.40 to 5.10 p. m., with the wind veering rapidly from southeast to northwest, and finally coming around to east at night. The vortical motion of the tornado was clearly shown in the case of a partly finished building facing north-eastward, which was twisted around to the right fully seven feet, and the trees, which also fell from west to east. A large number of buildings were unroofed or otherwise injured, and two cars on the railroad near the river were overturned. The damage to property in this city is estimated at \$10,000.

Knoxville, 23d: The wind and rain storm of last night did but little damage in this locality. The fall of rain (3.75 inches) was the largest that has occurred in any one day at this place during the last five years.

Texas.—Sherman, Grayson county, 13th: an unusually severe wind storm struck this place about 12 o'clock last night, doing damage to the extent of several thousand dollars. Several houses were blown down and other were unroofed. The storm lasted for two hours and thirty minutes. Reports from Fort Worth, state that the storm was unusually severe at place.

Dallas, 28th: reports from Bell, Polo Pinto, Hood, Johnson and Fannin counties, state that a severe wind and hail storm passed over those counties during the evening of the 27th, doing great damage to crops, buildings and other property, and causing loss of life. The storm was also severe at Marshall, Harrison county, where several persons were injured. The hail-stones in some places were reported to have been as large as hen's eggs. Among the buildings destroyed were the Masonic hall, the Conatre mills, and one residence. Nearly all of the windows in the town were broken. The storm passed four miles north of Benton, Atascosa county, demolishing houses and doing other damage. Four persons are reported to have been killed.

Fort Davis, 29th: at 4.40 p. m., a violent storm struck this place, blowing down and unroofing several buildings. During the storm the atmosphere was so charged with electricity that it became necessary to disconnect the telegraph instruments from the main line.

Virginia.—Richmond: a strong northeasterly gale prevailed here during the 16th and 17th, unroofing a number of buildings and blowing down many trees and fences. On the 22d, a very heavy rain storm occurred, accompanied by a strong northeast wind. The street cars stopped running at 9.30 p. m., on account of the severity of the storm.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for April, 1883, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 85.90 per cent. The percentages for the four elements are: weather, 88.72; direction of the wind, 79.43; temperature, 89.13; barometer, 86.14 per cent. By geographical districts, they are: For New England, 84.53; middle Atlantic states, 84.15; south Atlantic states, 86.83; eastern Gulf, 88.28; western Gulf, 88.43; lower lakes, 84.42; upper lakes, 84.60; Ohio valley and Tennessee, 85.48; upper Mississippi valley, 86.20; Missouri valley, 85.92; north Pacific, 92.86; middle Pacific, 81.73; south Pacific, 86.54.

There were sixty-seven omissions to predict (seventeen being due to the absence of reports from the Pacific coast) out of 3,690, or 1.80 per cent. Of the 3,623 predictions that have been made, ninety-four, or 2.59 per cent., are considered to have entirely failed; one hundred and twenty-two, or 3.37 per cent., were one-fourth verified; four hundred and twenty-nine, or 11.84 per cent., were one-half verified; four hundred and forty-four or 12.26 per cent., were three-fourths verified; 2,534, or 69.94 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

CAUTIONARY SIGNALS.

During April, 1883, one hundred and twenty-four cautionary signals were displayed. Of these, one hundred and thirteen, or 91.1 per cent., were justified by winds of twenty-five miles or more per hour, at or within one hundred miles of the station. Two cautionary off-shore signals were displayed, both of which were justified as to direction and velocity. One hundred and twenty-six signals, of all kinds, were displayed, of which one hundred and fifteen, or 91.3 per cent., were fully justified. These do not include signals ordered at display stations, where the velocity of the wind is only estimated. Eleven signals were ordered late. One hundred and three winds of twenty-five miles or over per hour were reported, for which signals were not ordered; many of these were high local winds or strong sea-breezes.

NAVIGATION.

STAGE OF WATER IN RIVERS.

The upper Mississippi river reached its highest stage from the 22d to the 30th, and was lowest during the first part of the month. It was frozen at Saint Paul, Minnesota, until the 6th,